

TO: Director, National Institute for Occupational Safety and Health

FROM: California Fatality Assessment and Control Evaluation (FACE) Program

SUBJECT: Longshoreman/swingman falls from personnel platform being lowered into ship and dies in California

SUMMARY
California FACE Report 98CA009

A 37-year old longshoreman/swingman (decedent) died when he fell from a personnel platform that was being lowered into a ship by a crane. The decedent fell over the platform's guardrail and dropped 15 feet onto a cargo container. The personnel platform was permanently attached to the structural steel of an electro-hydraulic device, commonly called a spreader, spreader beam, or beam. The beam is used to grasp cargo containers so they can be lifted on and off ships. One edge of the beam caught on a container as it was being lowered and when it released the beam began to swing back and forth along its length. The crane operator began lowering the platform to limit the decedent's falling distance but stopped the lowering abruptly because he did not want to crush the decedent if he fell. When he stopped lowering, the decedent fell. The decedent had a radio but never indicated to the crane operator that there was a problem. The decedent was not wearing fall protection. Reports indicated that the victim had a blood alcohol concentration of 0.19%. The CA/FACE investigator determined that, in order to prevent future occurrences, employers should:

- ensure all workers working at dangerous heights are wearing appropriate fall protection equipment.
- ensure communications between crane operators and signalmen are continuous during crane operations.
- ensure employees do not work while under the influence of alcohol.

INTRODUCTION

On June 29, 1998, at 6:30 a.m., a 37-year old male longshoreman/swingman was fatally injured when he fell from a personnel platform that was permanently attached to the top of a cargo container beam. The beam was being lowered into the hold of a ship when it caught on a container. When it released, the beam began to swing back and forth. The crane operator tried to lower the beam, but when he stopped to avoid possibly crushing the decedent, the decedent fell out of the basket onto a container 15 feet below. The CA/FACE investigator learned of this incident on June 30, 1998 from the local legal office of the California Occupational Safety & Health Administration (Cal/OSHA). On July 1, 1998, the CA/FACE investigator traveled to the

incident site where he met with the company safety/security director, an attorney representing the company, the local union business agent, and a representative of federal OSHA. The CA/FACE investigator also took photographs of the area where the incident happened.

The employer, involved in maritime (shipping) activities, has been in business for approximately 50 years at the time of the incident. The company has 8,000 employees (United States only) with 200 working on site at the time of the incident. The decedent had worked for the company for 15 years on and off as needed, and had worked at the site of the incident for one day. Company safety responsibilities were defined, with the company safety/security director having overall responsibility and superintendents and site foreman having successive responsibility at the various sites. The company had an Injury and Illness Prevention Program (IIPP) which contained all of the required elements and a code of safe practices. The decedent was trained in the hazards of the maritime industry through an employer association that trains and places employees in various jobs in the industry. The employer had no specific, written instructions for the duties of a swingman. Safety meetings were conducted before every shift since workers often change daily in this industry.

INVESTIGATION

The site of the incident is a large commercial port where ships are docked to load and unload cargo containers. A number of gantry cranes move along tracks so they could line up with the position of a ship at the dock. When lined up, the cranes move cargo containers and other materials to the ship from the dock and from the ship to the dock. (**Exhibit 1**)

On the day of the incident, the 3:00 a.m. to 8:00 a.m. or graveyard (commonly called "hoot owl") shift was nearly finished. Shift workers had been loading a ship with containers during the early morning hours. They were using a 40-ton gantry crane to place containers into the hold and onto the deck of the ship. The containers measured 20-feet wide and 40-feet wide.

The device used to pick up and move the containers is commonly called a beam. (**Exhibit 2**) It is a electro-hydraulic device that spans the container and clamps onto the ends of the container to capture it. Its span is adjustable depending on the width of the container. It is operated by the crane operator from the cab of the crane. The operator's cab is located over 60 feet above the dock where the containers are picked up. (**Exhibit 3**) The cab moves with the beam (and its load) out to ships along side the dock.

In order to stack cargo containers on top of one another, devices called cones must be placed at the four corners of the top of one container. The bottom corners of the next container are fitted into these cones which locks the containers on top of one another. Normally a cone basket, a container full of cones, (**Exhibit 4**) is lowered to the area in which the cones have to be placed. A swingman, whose job it is to place the cones into the corners of the containers, is lowered via the personnel platform afterwards. The platform is approximately 3 feet wide and 5 feet long. It is surrounded on all sides by standard guardrails. It is permanently attached to the top structural steel members of the beam. (**Exhibits 5 & 6**) It is used to transport personnel from the dock to the ship and vice versa.

The decedent was performing the job of a swingman. He climbed up a fixed ladder into the personnel platform through its swinging gate. There are fixed ladders on either side of the

platform with swinging gates on each side. The gates only swing inward and have a stop on them to prevent them from swinging outward.

The beam is not allowed to have any cargo containers or materials attached when a swingman is in the personnel platform and there was none in this instance. The swingman had a radio with which he could communicate, in lieu of hand signals, with the crane operator. The decedent in the personnel platform was picked up off the dock when the crane lifted the platform and began to move the platform toward the ship. The decedent was not wearing any personal fall protection and company policy did not require it.

As the crane operator began to lower the beam into the ship, one corner of the beam caught on a container. According to the crane operator, the decedent did not inform him via his radio that the beam was caught. The crane operator could not tell by feel that something was wrong because the beam is suspended by cables. What would occur is that the cables would begin to go slack but not transfer any feeling to the crane operator.

Before a notable amount of slack in the cable occurred, the beam slipped off the container. This caused the beam to rock back and forth along its length. The decedent reached out and held on to the two swinging gates. This caused him to forcefully move back and forth with the swinging motion of the beam. The crane operator noted the problem and began to lower the beam in case the decedent fell. He did this so the decedent would not fall so far.

When the crane operator had lowered the beam, he stopped the lowering abruptly because he felt that if the decedent fell the beam would crush him. When the lowering stopped, the decedent fell out of the man basket onto a container 15 feet below. His co-workers went to his aid, but his injuries were obviously massive and no first aid was attempted. A call was made to emergency services. The paramedics arrived and found the decedent to have such massive injuries, that he was not treated and immediately pronounced dead.

Subsequent information revealed in the autopsy and by the treating physician indicated that the decedent had a blood alcohol concentration of 0.19%.

CAUSE OF DEATH

The death certificate stated the cause of death to be multiple blunt injuries.

RECOMMENDATIONS/DISCUSSION

Recommendation #1: Employers should ensure all employees working at dangerous heights are wearing appropriate fall protection equipment.

Discussion: In this incident the personnel platform from which the decedent fell had appropriate guardrails. However, the decedent was not wearing personal fall protection at the time of the incident. There was a great danger of falling from the personnel platform because the beam, especially when not loaded with cargo, could swing. This is especially true if it bumps against or catches on something during its travel. Injury or death is likely because of the heights the personnel platform is lifted above ground or other objects. Discussions with those interviewed indicated that there have been other incidents where employees have fallen out of the personnel platform. Those incidents resulted only in injuries, not death. Company policy does not require personal fall protection, such as a harness and lanyard, to be used when employees are

transported in the personnel platform by the crane. If the employer required that personal fall protection equipment is always worn when employees are in the personnel platform, this incident may not have happened.

Recommendation #2: Employers should ensure communications between crane operators and signalmen are continuous during crane operations.

Discussion: In this instance, the decedent did not communicate with the crane operator indicating that the edge of the beam was lodged on a container. Although the cab of the crane is almost directly overhead, the crane operator is not able to discern all obstacles and relies on signals or communication from the swingman. Communications should be continuous as it is with hand signals. The crane operator should expect to receive continuing verbal commands or "okays" as he lifts personnel via the personnel platform. Employers should consider instructing crane operators when they are lifting personnel that if they do not receive continuous communications when their vision is blocked to cease operations. If the crane operator had received a communication from the swingman that the beam was lodged on a container, he could have taken corrective action and this incident may not have happened.

Recommendation #3: Employers should ensure employees do not work while under the influence of alcohol.

Discussion: In this incident the employee had a blood alcohol concentration (BAC) of 0.19%. Research has shown that information processing, attention, and other complex skills are affected at BACs of as low as 0.01 to 0.02%. This implies that the victim's ability to concentrate on and analyze the situation for communication with the crane operator may have been impaired. The role that poor communication played in contributing to the victim's death has been discussed (Recommendation #2). Employers can help to ensure employees do not work under the influence of alcohol or other substances through symptom recognition, training, workplace modifications and employee assistance programs (EAPs). Workplace modifications that have successfully curbed alcohol and drug use have targeted some of the conditions that promote substance use/abuse; lax employer policy regarding alcohol/drugs, acceptance of use by coworkers/managers, stressful work conditions, etc. EAPs identify, assess, and refer workers with substance abuse problems.

References:

Barclays Official California Code of Regulations, Vol. 9, Title 8, Industrial Relations, South San Francisco, 1998

For general information regarding fall protection refer to:
<http://www.dir.ca.gov/title8/1670.html>, [/3299.html](http://www.dir.ca.gov/title8/3299.html), [/3648.html](http://www.dir.ca.gov/title8/3648.html), [/5004.html](http://www.dir.ca.gov/title8/5004.html)

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FATALITY ASSESSMENT AND CONTROL EVALUATION PROGRAM

The California Department of Health Services, in cooperation with the Public Health Institute, and the National Institute for Occupational Safety and Health (NIOSH), conducts investigations on work-related fatalities. The goal of this program, known as the California Fatality Assessment and Control Evaluation (CA/FACE), is to prevent fatal work injuries in the future. CA/FACE aims to achieve this goal by studying the work environment, the worker, the task the worker was performing, the tools the worker was using, the energy exchange resulting in fatal injury, and the role of management in controlling how these factors interact.

NIOSH funded state-based FACE programs include: Alaska, California, Iowa, Kentucky, Maryland, Massachusetts, Maryland, Minnesota, Missouri, Nebraska, New Jersey, Ohio, Oklahoma, Texas, Washington, West Virginia, and Wisconsin.

Additional information regarding the CA/FACE program is available from:

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